

Announcement Of Opportunity (AOO)

NASA Ames Research Center Proposed Photovoltaic Power System for Hangar One

July 25, 2005



Historic Photo showing Hangar One at Moffett Field, CA
(Moffett Field is located 40 miles south of San Francisco)

AOO - Proposed Photovoltaic Power System for Hangar One

Table of Contents

Section I: Background Information
Section II: NASA Ames's Goals and Objectives
Section III: Scope of Services
Section IV: Proposal Requirements
Section V: Site Visit and Proposal Submission
Section VI: Exhibits

Proposed Schedule Of Events

Site Visit.....	September 6, 2005
Deadline for Submitting AOO Questions.....	September 13, 2005 Final
Addendum.....	September 29, 2005
Deadline for Submission of Proposals.....	October 14, 2005

Section I: Background Information

Hangar One is located at Moffett Field, California. The hangar was built in 1932 to house the U.S.S. Macon, a U.S Navy dirigible. Hangar One is a distinctive landmark of the San Francisco Bay Area. The hangar structure consists of steel truss arches, metallic sheathing and full clamshell doors. The hangar is 1,140 feet in length, 308 feet in width and 198 feet in height. Hangar One is a designated federal historic property and is the principal historic property of the Shenandoah Plaza Historic District.

The siding covering Hangar One is contaminated with hazardous materials, namely PCBs and asbestos, as well as lead paint. The U.S Navy is obligated to remediate the hazardous materials under orders from the EPA. One of the Navy's remediation proposals (Alternative 2-E) is to remove the contaminated exterior siding of the Hangar (see the Navy's Alternatives in Exhibit B). However, the Navy has stated that its federal environmental clean-up funding does not allow for reconstruction (i.e., replacement of the contaminated siding with new siding). NASA, the current federal custodian of the hangar, could end up with a bare structural frame (no exterior siding) that could be left standing (rather than the Navy demolishing the entire structure as proposed in alternative # 4). NASA is interested in proposals for rehabilitating Hangar One with new siding as part of a PV system defined in this AOO. Remediation of the environmental contamination is the Navy's responsibility and not part of this AOO.

Assuming that the Navy elects to remove the contaminated exterior siding and leave the structural frame of the hangar (Alternative 2-E), NASA intends to enter into an enhanced use lease or other legal instrument with a third party (for purposes of this AOO, a "Developer") to install a new PV system that will generate a minimum of two megawatts of electricity along with the hangar's re-siding work at no cost to the Government. This AOO IS NOT A PROCUREMENT, and NASA does not intend to enter into a procurement contract. The Developer would be allowed to sell the power generated by the PV system. The Developer would not be responsible for removing the existing contaminated siding or any environmental clean up of the hangar structural frame. A bare

hangar frame, free of environmental contamination, would be provided to the Developer. It is anticipated that the frame would be available to the Developer by approximately August, 2006, subject to the Navy's schedule. NASA would like the Developer to start work within three months of completion of the Navy's remediation work. The structural frame would be similar in appearance to the hangar frame that is shown on page 7, Fig 1.

The Airport Beacon that sits on top of Hangar One shall remain operational in accordance with Federal Aviation Administration regulations. This Beacon alternates between white and green, which signifies it as a federal airfield. This is most important during Instrument Flight Rules conditions, because it points out the position of the airfield to aviators. It is imperative that the airfield beacon remains operational to support aircraft operations in the community and more importantly Moffett Field.

Section II: NASA Ames's Goals and Objectives

NASA Ames intends to achieve the following general goals and objectives by pursuing a Developer for the installation of solar PV generation system at the historic Hangar One:

NASA is committed to improving energy efficiencies at all its Centers and to reduce dependence on fossil fuel electric generation.

To utilize Hangar One to demonstrate clean power generation of electricity from PV and to preserve a major, historic icon of the Bay Area. This installation could be a test bed for utilizing the latest technologies in solar power systems and a model for other governmental agencies and the community. The project would also contribute to the State of California's goal of adding 3,000 megawatts of additional renewable energy capacity before the year 2018.

To obtain new weather tight exterior siding on the hangar frame that will replace the contaminated existing hangar's metal siding. The Developer is responsible for providing and installing a new corrosion-resistant siding that will replace the contaminated siding removed by the Navy. The new siding shall provide rainwater leak integrity. (Removal of the existing siding is not the responsibility of the Developer).

To utilize the exterior surface area of Hangar One to effectively generate electricity using a solar PV system. The electricity generated (minimum of two megawatts) would be sold by the Developer. The energy provided from the PV system would help to meet NASA's requirement to have 2.5% of energy use provided by renewable sources, if the power was sold to NASA. NASA currently obtains power from the Western Area Power Administration at an average rate of approximately \$.06/kWh.

The electricity could be fed into the NASA 12kV electrical distribution system to offset electrical energy coming into the center from the transmission grid.

To establish an agreement with a Developer to undertake the project and to define the contractual conditions, such as length of contract, system ownership, marketing and advertising rights, guarantees and bonding requirements, and the operational/maintenance responsibilities.

To facilitate the investment in solar PV technologies by industries and businesses within the region.

To educate the public about the benefits of renewable energy generation and its impact on the environment and global warming.

To improve environmental quality in the greater San Francisco Area.

Section III: Scope of Services:

NASA is seeking a Developer or a team of Developers to provide a cost effective, weather tight exterior siding with integrated solar PV panels/modules to generate electricity.

In 2004, NASA Ames commissioned a Hangar One PV study by the U.S Department of Energy, Federal Energy Management Program. The National Renewable Energy Laboratory evaluated the potential of using a roof mounted photovoltaic system for the hangar. A copy of the report is attached as Exhibit A. NASA Ames supplies this report for information only. Developer shall not use the life cycle costs presented in the report.

Developer shall guarantee that all outside surfaces of the hangar currently covered with contaminated protected metal siding will be completely covered with new siding, as previously specified, to form the hangar siding and the roof area. Siding material shall be corrosion-resistant as well as UV resistant and shall provide rain water leak integrity.

NASA Ames expects the Developer to explore all available incentive programs to fund the undertaking. NASA will not provide any funds for the siding, PV system, or its installation. NASA's contribution is to provide the use of the Hangar One's outer surface area, with options to purchase delivered power, and the right to use the project for credentials, publications and advertising.

The scope of services provided shall also include, but not limited to, the Developer securing all permits and approvals from governing agencies, all labor, taxes, services and equipment necessary to produce fully operational solar PV system and to provide a weather-tight siding for Hangar One.

The Developer is encouraged to submit proposals for utilizing additional PV system installations at NASA Ames / Moffett Field to augment the surface area available for PV at Hangar One.

Section IV: AOO Proposal Requirements

Proposals shall include two elements:

The first element includes the Developer's qualifications, past-project examples, references, and key personnel information.

The second element involves the Developer's site-specific technical proposals for the solar PV containing roofing/siding panels on Hangar One.

The following items shall be included in the Qualifications Element of the Proposal:

A. Qualifications

Proposals must provide information that clearly demonstrates the ability of the Developer to deliver the full scope of services outlined in this AOO. Given the

magnitude of the solar PV program investment, NASA Ames is interested in establishing a relationship with a Developer that has:

- 1) demonstrated extensive experience in the successful installation and management of commercial or public solar electric systems,
- 2) worked with a public entity on a solar PV program, and
- 3) established a local office or project manager (or intends to if selected).

B. Team Information

If Developer contemplates a team of firms to perform the scope of work, then the following information shall be supplied:

- Name of lead or prime firm.
- Total capacity in kilowatts of PV systems placed into commercial operation or practical demonstration to date. Identify the project type – turnkey or third party energy sales.
- Names of other team member firms and the persons from those firms dedicated to this program.
- Roles and responsibilities of each team member, and the relationship between the team members, include an organizational chart.
- History of past projects that the team members have worked on together.

If Developer alone submits the proposal, then the following information shall be provided:

- Identity of any subcontractors the Developer intends to employ in execution of the program.
- Total capacity in kilowatts of PV systems placed into commercial operation or practical demonstration to date.
- Roles and responsibilities of key personnel
- Organizational chart

C. Past-Project Experience

Proposals shall include a brief description of past solar PV projects/programs that are similar in nature as those expected to result from this AOO. The description for each project/program should include:

- The project name
- Location
- Project size (total cost and project capacity in kW)
- Project type – turnkey or third party energy sales
- Year completed
- Name of project manager
- Name of client contact
- Brief physical description of the project (economic basis, equipment

manufacturer, model, etc.)

A brief discussion of any specific challenges and how they were overcome

D. References

Proposals shall include at least three recent (within past five years) references of solar PV projects/programs done by the Developer. The information noted above in the Past-Project Experience section should be included and can be used as references. Also provide the customer's contact name, title, address, phone numbers, and email address.

E. Market Penetration Support

Discuss your firm's interest in supporting NASA's efforts in encouraging investment in solar PV systems by industries and businesses within the region. Specifically discuss any financial incentives or other mechanisms your firm is willing to employ to enhance investment in solar PV.

F. Litigation

Proposals shall indicate whether the firm or any team member or any officers or principals have been party to any lawsuit involving the performance of any equipment it has installed, including environmental litigation, and provide a summary of the issues and status of the lawsuits.

Site-Specific Solar PV Technical Proposals

Technical information regarding Hangar One can be found in Exhibit A, NASA Ames Research Center Study of Photovoltaic System for Hangar One, dated June 7, 2004. In addition to the information provided, a site visit have been scheduled for September 6, 2005, so that Developers can assess the specific facilities.

The Developer shall submit brief technical proposals that optimize PV output based on the Hangar geometry, electrical load and rooftop/siding areas available for mounting PV systems. This shall include a business model that includes the economic basis for the proposed system. It will be the Developer's responsibility to validate the solar orientation and the available rooftop and siding areas for the Hangar, based on the information provided and the site visits.

A. Technical Description

Developer shall provide a brief technical description of the technologies they propose to install that includes maintenance requirements, and anticipated servicing and repair requirements of the PV system.

B. Implementation Schedule

Developer shall provide a simplified proposed implementation schedule for the project.

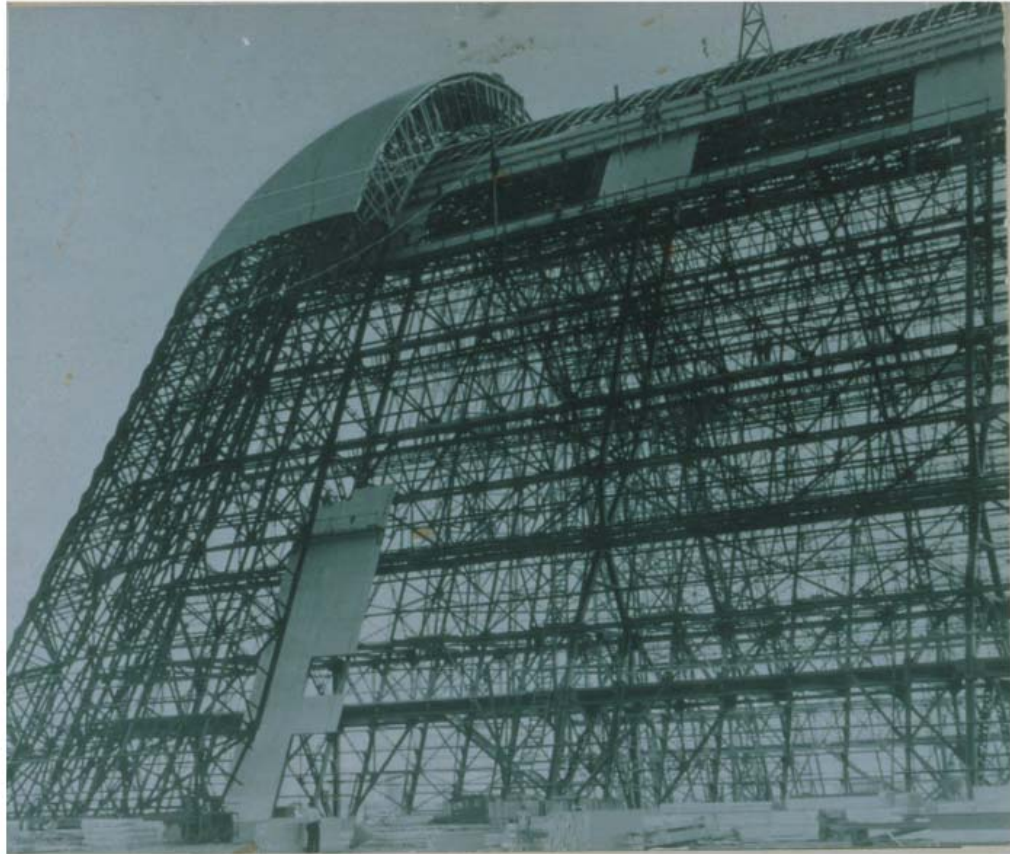


Figure (1) 1932 Hangar One Structural Frame (without siding)

Section V: Site Visit and Proposal Submission

- **Site Visit to be Held On September 6, 2005 at 10:00 AM at the north end of Hangar One parking lot, Moffett Field, CA. A limit of 3 persons per company is set for this Site Visit.**

(Note: A driver's license or other Photo Identification is required to pass the guard station.)

Only Developers with Expressions of Interest of this AOO should Attend.

Send An Email Or Memo No Later Than September 1, 2005 Of Intention To Attend to:

Keith Venter, Ames Facilities Historic Preservation Officer

NASA Ames Research Center

Mail Stop 213-8

Moffett Field, CA 94035-1000

Best contact method is by email:

keith.venter@nasa.gov

• Questions From Developers Should Be Received NO LATER THAN 5:00 PM On September 13, 2005, To NASA by Email, U.S. Mail or recognized overnight courier service to:

**Keith Venter, Ames Facilities Historic Preservation Officer
NASA Ames Research Center
Mail Stop 213-8
Moffett Field, CA 94035-1000
keith.venter@nasa.gov**

• Proposals From Developers Should Be Received NO LATER THAN 5:00 PM On October 14, 2005,

Three Hard-Bound Copies of the Proposal Shall Be Submitted To:

**Keith Venter, Ames Facilities Historic Preservation Officer
NASA Ames Research Center
Mail Stop 213-8
Moffett Field, CA 94035-1000**

Section VI: Exhibits

- A. Study of Photovoltaic Power System for Hangar One, dated June 7, 2004, DRAFT
- B. Proposed Alternatives by the Navy for Hangar One.